REMARKS

This is intended as a full and complete response to the Final Office Action dated April 24, 2009, having a shortened statutory period for response set to expire on July 24, 2009 and to the Advisory Action mailed July 9, 2009. Claims 1, 12, 15-17 and 26 have been amended and new claims 28-29 have been added to more clearly recite various aspects of the invention. Support for these amendments may be found throughout the specification, including paragraphs [0021]-[0028]. Applicants believe no new matter has been introduced by the amendments and the new claims presented herein. The amendments and the new claims have been presented to place the application in condition for allowance or in better position for appeal. Please reconsider the claims pending in the application for reasons discussed below.

Applicants request that the Examiner review the Request to Correct Inventorship Under Rule 48 filed April 15, 2008 and provide a decision regarding same.

Claims 1-2, 4, 6, 10, 12-13 and 15-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Embedded Linux in a Soft Real-Time Task: The Canadian Geological Survey Internet Seismometer by Arescon, September 2001 ("Arescon") in view of US Publication No. 2002/0071430 ("Szyszko") and US Patent No. 6131119 ("Fukui"). Claim 1 has been amended to now include "a plurality of data source nodes, wherein each data source node is coupled to a portion of the plurality of seismic data sources; and a router coupled to a portion of the data source nodes and the data collection system, wherein the router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system in accordance with the open network protocol." Support for this amendment may be found throughout the specification, including figures 3-4 and paragraphs [0025]-[0026]. Applicants respectfully submit that these limitations are not taught in Arescon, Szyszko, Fukui, alone or in combination.

Arescon proposes a digital strong motion seismometer that is "mated" with an internet data server so that data from an instrument can be retrieved via standard Internet protocols. (See Arescon, page 5). The hardware of the seismometer includes an embedded computer with digital signal processing, data storage, and File Transfer

Protocol capabilities. (See Arescon, page 6). Applicants' claimed invention, however, is directed at a seismic acquisition system having data source nodes coupled to seismic data sources, and a router coupled to the data source nodes and to a data collection system as newly recited in claim 1. In contrast, Arescon does not describe or mention a seismic acquisition system having data source nodes or a router. The Examiner explains that Arescon teaches at least one line network connecting the seismic data sources to the data collection system via the open network protocol in figures 1 and 3 and in page 5, section 3 to page 9 of Arescon. (See office action, page 3). Figure 1 of Arescon illustrates two accelerometers in a lab, and figure 3 of Arescon illustrates a power supply, an accelerometer, and a computer all combined together on two circuit boards. The relevant sections in page 5, section 3 to page 9 are provided below for the Examiner's convenience:

> In perspective, the Geological Survey of Canada plans to deploy a great number of strong-motion seismometers in the urban areas of Canada's seismic risk areas [ ] were at the same time a well developed Internet infrastructure is already in place.
>
> In order to take advantage of this communications infrastructure a digital strong motion seismometer was designed at the Pacific Geoscience Center and was mated with an Internet data server so that data from an instrument can be retrieved via standard Internet protocols.
>
> Normally the instrument acquires continuous acceleration data from the three orthogonal sensors and stores five minute blocks in a file system which is accessible over the Internet. This file system can hold data from about two and a half days and is permanently updated.
>
> Additionally, velocity, displacement [ ] and certain spectral properties [ ] are continuously calculated as well. As soon as the instrument detects a seismic signal, parametric data, such as peak ground acceleration, velocity and displacement together with spectral intensity data are reported in a **message send to central computer**.
>
> In the hardware design the **distinction between data acquisition system and data server is somewhat artificial**. An embedded computer, in the current design, the Intel compatible JUMP-tech ETX/MGX single board computer, is used to perform part of a digital signal-processing chain from the data from the accelerometers **as well as** to provide data storage and access to data by standard File Transfer

> Protocol (FTP). (Arescon, page 5, paragraph 4 to Arescon, page 6, paragraph 1, Emphasis added)
>
> The output from the sensor packs is digitized by a 16-bit A/D converter and digitally filtered (decimated) in a first stage before it is passed on to **the single board computer** which is an integral part of the data acquisition system and also **implements the data and communications server for the instrument**. The sensitivity of the digitization is ultimately equivalent to 18 bits due to oversampling and a two-stage decimation filter. (Arescon, page 7, paragraph 2, Emphasis added)

As shown above, Arescon is not directed at connecting the seismic data sources to the data collection system via the open network protocol. In fact, Arescon illustrates in Figure 3 that its seismic data source and its data collection system are combined together on two circuit boards and housed together in the same enclosure. In this manner, Arescon does not utilize an open network protocol to connect its seismic data sources to the data collection system. Arescon's accelerometer (seismic data source) and computer (e.g., data storage system) are likely connected to each other through a local bus communication system, as opposed to an open network protocol as taught by claim 1.

Moreover, Arescon never explains how its accelerometer is connected to the data collection system. Applicants' claimed invention, however, specifically defines the seismic acquisition system as having a plurality of seismic data sources, a data collection system, a plurality of data source nodes and a router. The data source nodes and the router serve as intermediaries between the seismic data source and the data collection system.

In order to further emphasize the intermediary characteristics of the data source nodes and the router, claim 1 has been amended to now include "wherein each data source node is **coupled** to a portion of the plurality of seismic data sources" and a router **coupled** to a portion of the data source nodes and the data collection system." As such, the seismic data sources are connected to the data collection system through the data source nodes and the router of the seismic acquisition system. The seismic acquisition system, thereby, facilitates communication between the seismic data sources, the data source nodes, the router, and the data collection system. (See

paragraph [0024] of specification). In contrast, Figure 3 of Arescon indicates that the accelerometer and the computer are both fit together on two circuit boards without using either data source nodes or a router. In fact, Arescon does not mention using data source nodes or a router to send the seismic data from the seismic data source to the data collection system anywhere in its disclosure. As such, Arescon does not teach using data source nodes or a router to transfer data from a seismic data source to a data collection system.

The Examiner explains, with regard to claim 1, that Arescon discloses a router for routing data generated by the seismic data sources to the data collection system through the data source nodes in figure 1 and pages 7-9 of Arescon. (See office action, page 4). As mentioned above, however, Figure 1 of Arescon merely illustrates two accelerometers in a lab. This figure fails to teach or describe a router anywhere in its image or its caption. Further, pages 7-9 of Arescon never even mention a router. In fact, the only part of pages 7-9 of Arescon that is related to a router reads, "The output from the sensor packs is digitized by a 16-bit A/D converter and digitally filtered (decimated) in a first stage before it is passed on to the single board computer which is an integral part of the data acquisition system and also implements the data and communications server for the instrument." As seen from this sentence, Arescon does not teach using a **router** to transfer data to the data collection system. Instead, this section of Arescon describes the output from the sensor packs as being passed to a single board computer which serves as the data acquisition system and the data/communication server. As such, Arescon fails to provide a distinction between the seismic data source (e.g., data acquisition system) and its data collection system (e.g., data server). Applicants' claimed invention, however, recites the router and the data source nodes as being coupled to the seismic data sources and the data collection system to illustrate that the data source nodes, the seismic data sources, the router and the data collection system are all distinct and separate components that are coupled together. In contrast, Arescon teaches away from having distinct components when it explicitly describes the distinction between its data acquisition system and data storage system as being **artificial**. (See Arescon, page 6, paragraph 1). In this manner, Arescon's single board computer serving as the data acquisition system and the

data/communication server is not the same as a seismic acquisition system having "a plurality of data source nodes, wherein each data source node is coupled to a portion of the plurality of seismic data sources; and a router coupled to a portion of the data source nodes and the data collection system, wherein the router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system in accordance with the open network protocol," as recited in claim 1.

Both Szyszko and Fukui also fail to teach "a plurality of data source nodes, wherein each data source node is coupled to a portion of the plurality of seismic data sources; and a router coupled to a portion of the data source nodes and the data collection system, wherein the router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system in accordance with the open network protocol." For these reasons, claim 1 is patentable over Arescon, Szyszko and Fukui. Claims 2, 4, 6, 10, 12-13, 15-17 and 27-28 are also patentable over Arescon, Szyszko and Fukui, since they depend from claim 1. Withdrawal of the rejection is respectfully requested.

Claims 3, 5 and 27 stand rejected under 35 USC 103(a) as being unpatentable over Arescon in view of Szyszko, Fukui and Eos Tans. AGU Fall Meeting, 2001 by Johnson ("Johnson"). Neither Arescon, nor Szyszko no Fukui nor Johnson, alone or in combination, teaches "a plurality of data source nodes, wherein each data source node is coupled to a portion of the plurality of seismic data sources; and a router coupled to a portion of the data source nodes and the data collection system, wherein the router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system in accordance with the open network protocol." Since claims 3, 5 and 27 depend from claim 1 and since neither Arescon, nor Szyszko nor Fukui nor Johnson teaches all the limitations of claim 1, claims 3, 5 and 27 are therefore also patentable over Arescon, Szyszko, Fukui and Johnson. Withdrawal of the rejection is respectfully requested.

Claims 7-8 stand rejected under 35 USC 103(a) as being unpatentable over Arescon, Szyszko, Fukui in view of US Patent No. 4885724 (Read). Neither Arescon nor Szyszko nor Fukui nor Read, alone or in combination, teaches or discloses "a

plurality of data source nodes, wherein each data source node is coupled to a portion of the plurality of seismic data sources; and a router coupled to a portion of the data source nodes and the data collection system, wherein the router is configured to route the seismic data generated by the portion of the plurality of seismic data sources to the data collection system in accordance with the open network protocol." Since claims 7-8 depend from claim 1 and since neither Arescon nor Szyszko nor Fukui nor Read, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claims 7-8 are therefore also patentable over Arescon, Szyszko, Fukui and Read. Withdrawal of the rejection is respectfully requested.

Claim 26 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Arescon in view of Johnson. Claim 26 has been amended to now include "a first plurality of data source nodes, wherein each data source node is coupled to a portion of the first plurality of seismic data sources via **a first medium-bandwidth data path**, and wherein each data source node of the first plurality of data source nodes is assigned at least two network addresses; and a first router coupled to a portion of the first plurality of data source nodes via the **first medium-bandwidth data path** and to the first data collection system via a **high-bandwidth data path**, wherein the first router is configured to route the seismic data generated by the portion of the first plurality of seismic data sources to the first data collection system in accordance with an open network protocol, and wherein the first router is assigned at least two network addresses." Support for this amendment may be found throughout the specification, including paragraphs [0026]-[0028]. Accordingly, no new matter has been added by this amendment. Applicants respectfully submit that these limitations are not taught in Arescon or Johnson, alone or in combination.

Claim 26 has also been amended to include the same amendments as indicated in claim 1 as well as additional amendments to define the bandwidth data paths between each component (e.g., data source nodes, router, etc.). As such, claim 26 now recites that the data source node is coupled to the seismic data sources via a medium-bandwidth data path and that the router is coupled to the data collection path via a high-bandwidth path. This amendment further distinguishes the data collection system, the data source node, the seismic data source and the router from each other by clarifying

how each component is coupled to each other. Like claims 1, 3, 5 and 27, neither Arescon nor Johnson teaches the limitations of claim 1 that have been incorporated into claim 26. Claim 26 is therefore patentable over Arescon in view of Johnson. Further, since claim 29 depends from claim 26 and since neither Arescon nor Johnson teaches coupling seismic data sources and data collection paths via certain bandwidth paths as recited in claim 26, claim 29 is also patentable over Arescon in view of Johnson. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

The prior art made of record is noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action. Accordingly, allowance of the claims is respectfully requested.

Respectfully submitted,

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